

Wulfsberg Electronics



Flexcomm™ II
Digital Control Head
Controlling an
Analog RT-5000

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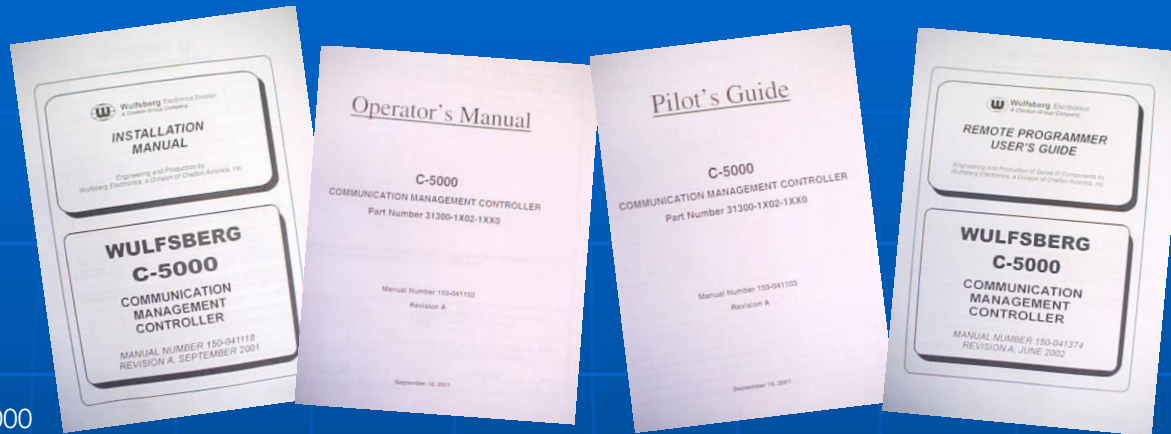
Section

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Section I

Required Components

System Manuals



C-5000
System Installation Manual
PN 150-041118

C-5000
Operator's Manual
PN 150-041102

C-5000
Pilot's Guide
PN 150-041103

RpWin
Software User's Guide
PN 150-041374

These manuals are downloadable at:

www.Wulfsberg.com

Primary System Components

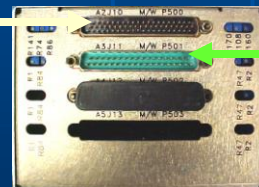
Pilot Headset



Front View

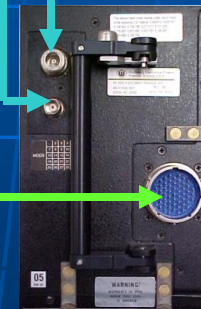


C-5000



Rear View

Multi-band Antenna



RT-5000
-OX01



Cloning Software & Cables

Wulfsberg

Wulfsberg **RpWin**
Remote Programmer
Software
PN 404-041382



Wulfsberg
Remote Programmer
Cloning Cable
PN 246-042755



Wulfsberg Clone Kit

includes:

Remote Programmer
Cable & RP Software
PN 149-041389

Cable Connections for RpWin Programming

RT-5000
-0X01



Radio Harness

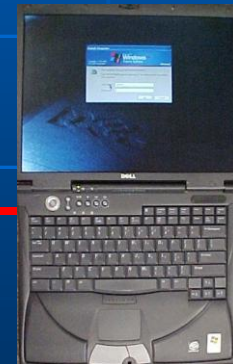
C-5000



System Interface Harness
(power, ground, audio lines, etc.)

Computer

Loaded with Windows-based:
Wulfsberg RpWin software



RP Cloning Cable

TIP: If your computer does not
have a serial port, you may
require a USB~Serial Adapter

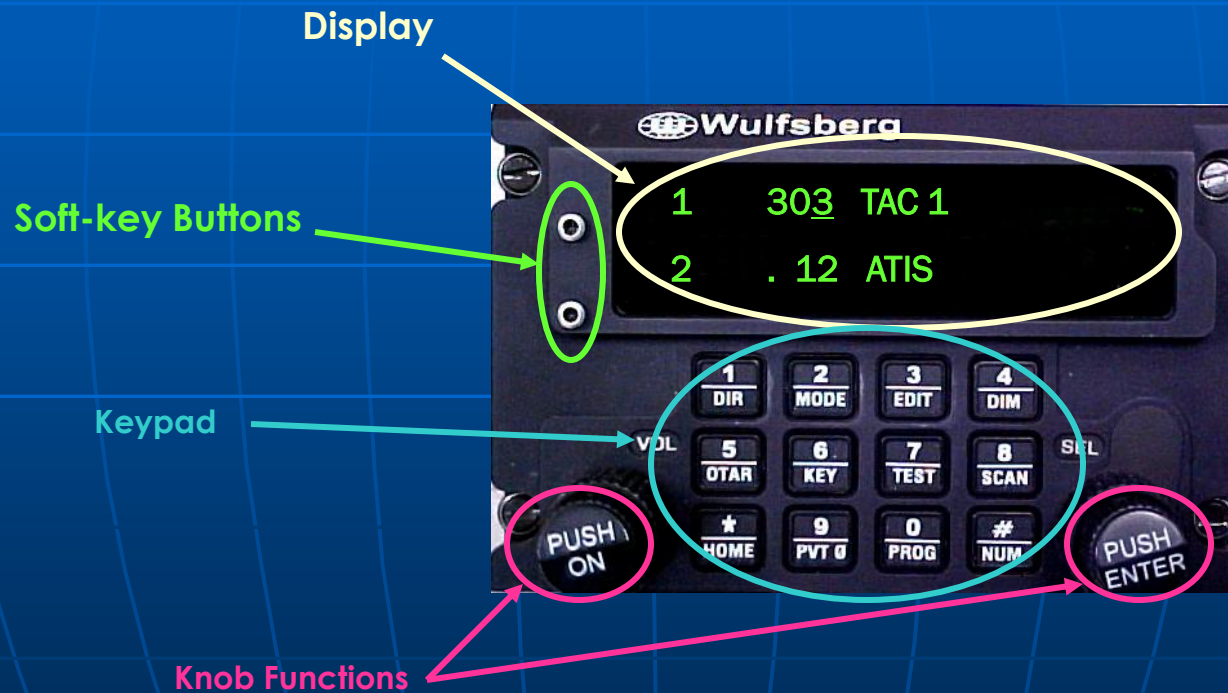
Section II

C-5000

Basic Operations

Basic Operation

C-5000 with Simplified User Interface



The HOME Page & Display Description

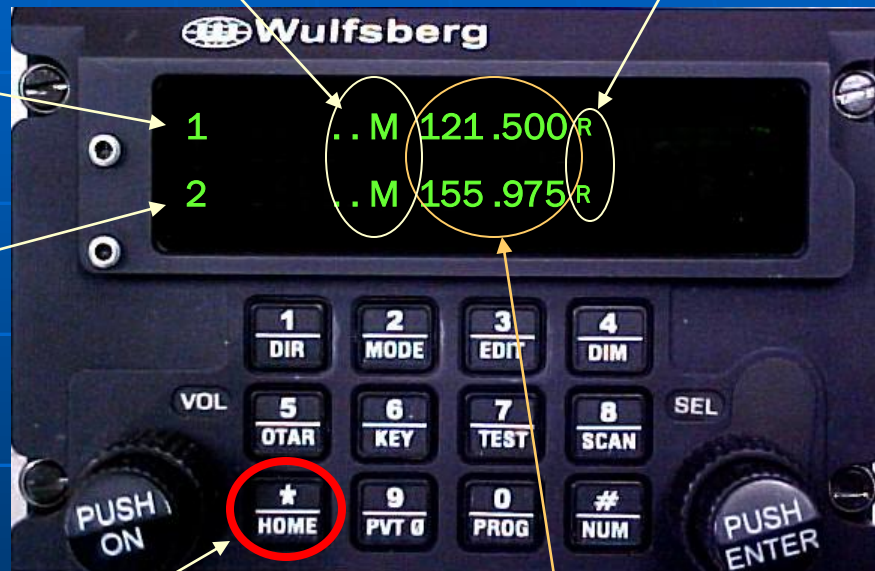
M = Manual Channel

R = Receive

Line 1 – always displays data for radio **System #1** (Primary Mic).

Line 2 – always displays data for radio **System #2** (Secondary Mic).

Note: If no #2 radio is installed, this line will be blank.



To return to this page at any time . . . Press the **HOME** key.

This space will display the preset channel Alpha ID (Channel Names)
OR
the Manual Channel frequencies.

Receive & Transmit Indication

Active Rx indicator shown on System 1 (reverse video).

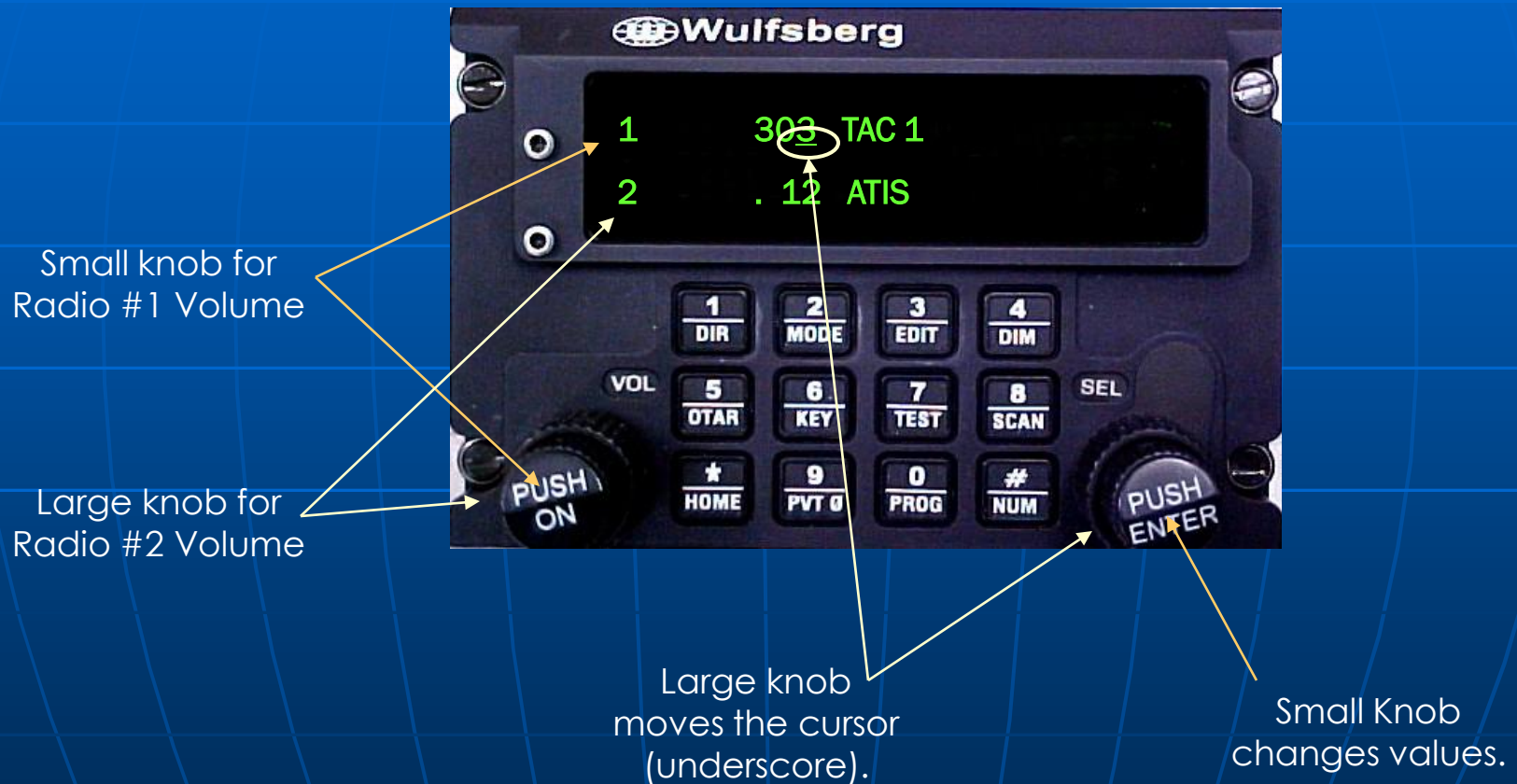
Active Tx indicator (pointer) shown on System 2.



T = Transmit

Note: The Alpha ID is replaced by the Transmit frequency during transmit.

Knob Functions



Soft Key Buttons

The Soft Keys are only used when prompted. For example; display dimming.



Keypad Functions



Toggle between Direct / Repeat Modes. Refer to Enhanced Mode training section.

Enhanced Modes access.

Opens EDIT page.

Display dimming.

Opens the "Test" squelch and display the Rx frequency.

The Scan key is not used at this time.

Channel # entry.

Access programming, configuration, and key-loading options.

Over-The-Air-Rekey

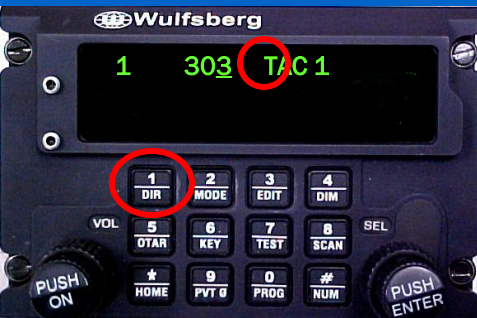
Alter the Tx encryption key for multi-key ops only.

HOME page

Private transmit (Ø) toggle switch (for compatible radios only).



The DIR Button in Repeater Mode



155.000 MHz Rx
150.000 MHz Tx

Repeater Tower

Channel 92
150.000 MHz Rx
155.000 MHz Tx



Air Support

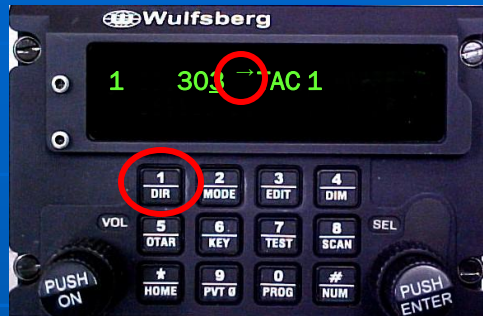


Channel 92
150.000 MHz Rx
155.000 MHz Tx



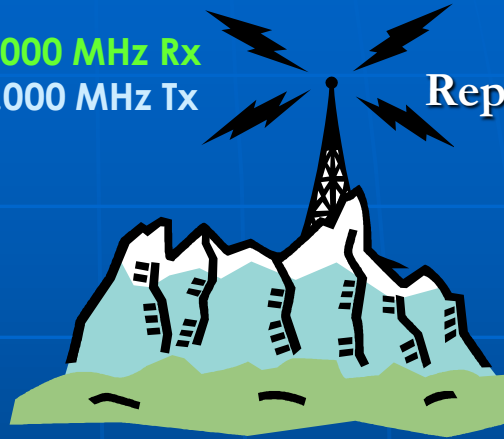
Ground Support

The DIR Button in Direct Mode



155.000 MHz Rx
150.000 MHz Tx

Repeater Tower



Channel 92

150.000 MHz Rx

155.000 MHz Tx

150.000 MHz Tx



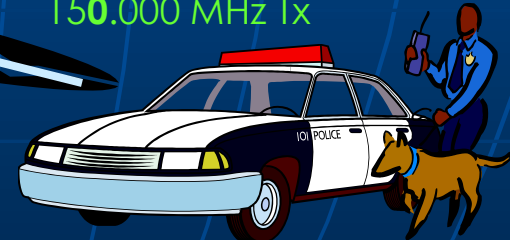
Air Support

Channel 92

150.000 MHz Rx

155.000 MHz Tx

150.000 MHz Tx



Ground Support

The DIM Button



Dim for nighttime & NVG display . . .

OR

Brighten for daytime use.

The OTAR Button



NOTE: This feature is not available
on analog RT-5000's -0X01

The KEY Button for multi-key encryption

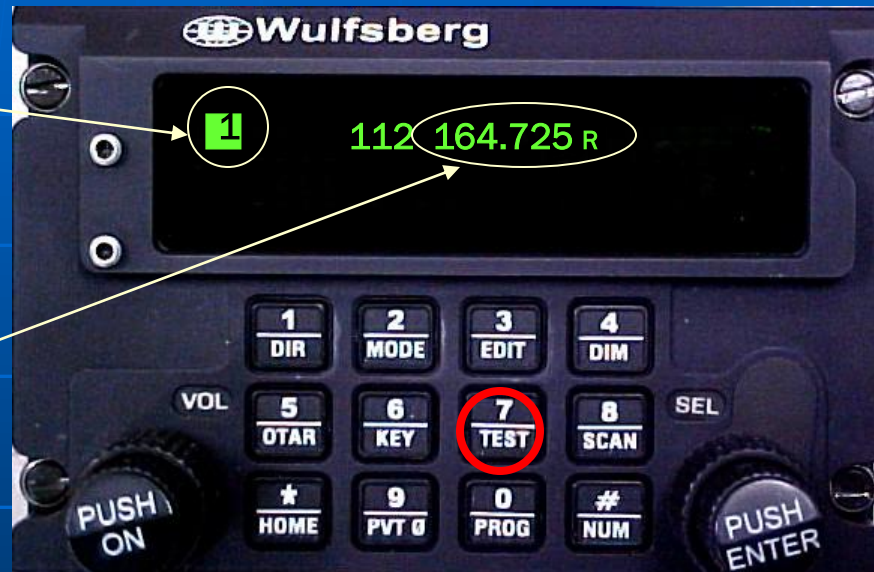


NOTE: This feature is not available
on analog RT-5000's -0X01

The TEST Button

Pressing the **TEST** button will force the squelch open showing a receive indication . . .

. . . and will display the channel Rx frequency.



TIP: This feature is useful for setting your volume levels and for verifying that your radio receiver is working.

TIP: The TEST button also has the affect of bypassing the sub-audible tones while being depressed.

The SCAN Button

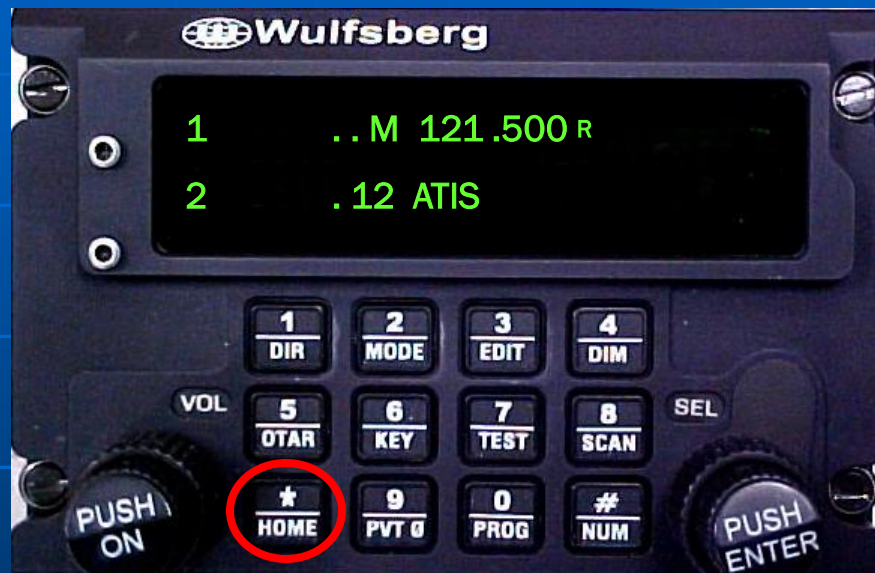


NOTE: **SCAN** is not currently available.

The HOME Button

HOME = Escape / Clear

To return to the Home page at any time . . . Press the **HOME** key.



The PVT Button



This channel has not been defined as a private channel, so the PVT key will have no effect.

NOTE: This feature is not available on analog RT-5000's -0X01

The PROG Button

The Program button opens
up the options for . . .



Preset Channel
Programming
Mode

This is an alternate
method to RpWin for
channel programming.

PROG: 2=NEXT 3=BACK
<ENTER>= SCAN GROUPS

Scan Groups
Programming
Mode

No scan options are
currently available.

PROG: 2=NEXT 3=BACK
<ENTER>= RP LOAD

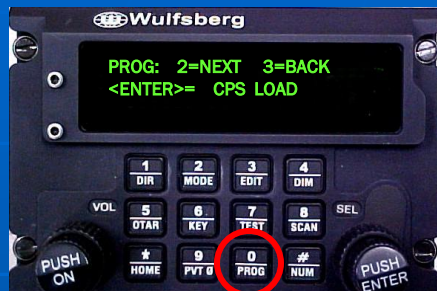
RP Software
Cloning
Mode

This mode is for **Sending**
RpWin data to a
computer.

Note: No preparation is
required for the C-5000
to receive data.

TIP: The program menu has an optional password barrier (Password 2), which may be turned off by entering <0000> into the hardware configuration. Factory default = <2222>.

The PROG Button Cont'd



CPS Software
Cloning
Mode

This mode is used when
Reading or Writing data
to/from digital RT-5000's.

Note: This is not
available on Analog RT-
5000's.

PROG: 2=NEXT 3=BACK
<ENTER>= KVL LOAD

KVL Load
Mode

This mode is used when
loading keys to a digital
RT-5000.

Note: This is not
available on Analog RT-
5000's.

PROG: 2=NEXT 3=BACK
<ENTER>= KEY ERASE

Key Erase
Mode

Used to erase encryption
keys in a digital RT-5000.

Note: This is not
available on Analog RT-
5000's.

PROG: 2=NEXT 3=BACK
<ENTER>= CFG SYSTEM

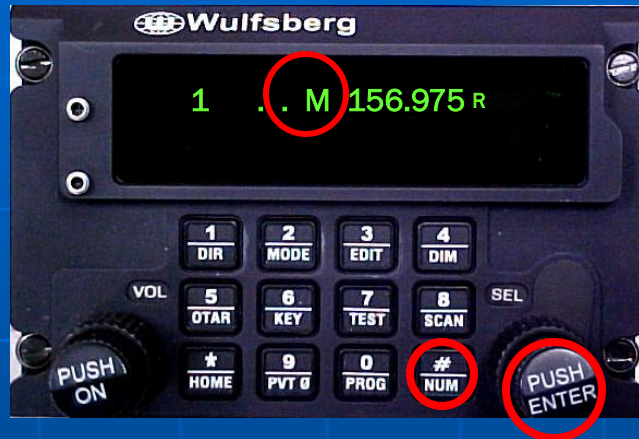
System
Configuration
Mode

This is an alternate
method to RpWin for
hardware configuration.

Note: This is password
protected and should
only be accessed by
selected individuals.

TIP: The configuration page has a higher level password
barrier (Password 1). The factory default = <1111>.

The NUM Button



Pressing # **ENTER** will take you to the **Manual (M)** channel.



Or you may enter any programmed preset channel # and press ENTER.

The EDIT Page for the Manual Channel

HOME Page
Manual Channel: M



Enter any MAIN
frequency 29.7 – 960 MHz

CTCSS (PL) or
DCS (DPL) tones

AM or FM
(analog only)

N = Narrow Band (12.5 kHz)
S = Standard Band (25.0 kHz)
W = Wide Band (35.0 kHz)
X = Extra-wide Band (70.0 kHz)

HI Power Output (nominal):

FM: 10 Watts

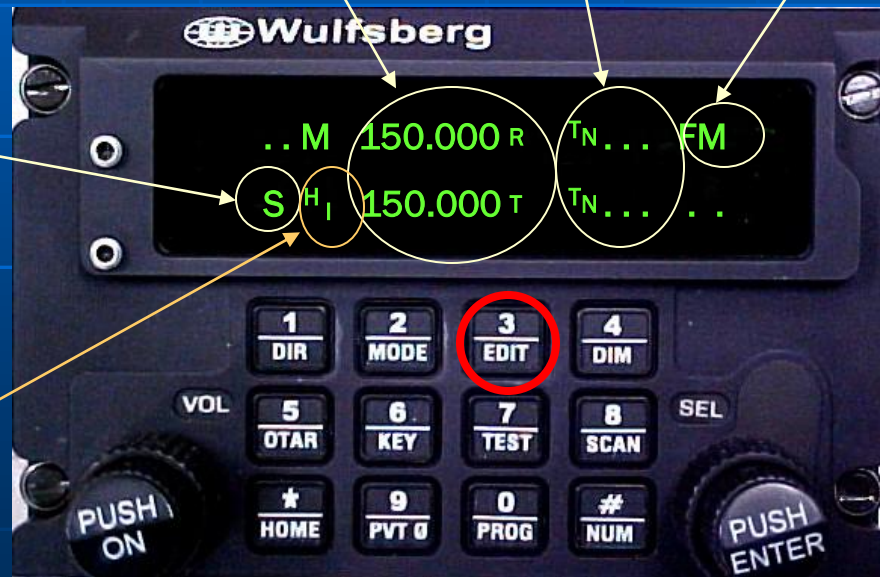
AM: 12 Watts

LO Power Output (nominal):

AM: 7.5 Watts

FM Lo Band: 1.0 Watts

FM Hi Band: 2.5 Watts



EDIT Page
Manual Channel: **M**

The EDIT Page for Main Preset Channels



HOME Page
Example: Channel 9

On **Main** preset channels, tones & power level may be altered.



EDIT Page
Channel 9

TIP: When the channel is changed, the Tones will revert back to the original value, but the power level will not revert.

Section III

Advanced Operating Modes

Mode 1 vs. Mode 2



Mode 1 lists all preset channels in numerical order.

Note: Analog RT-5000's P/N -0201 thru -0501 will automatically be in Mode 2 at all times.

Mode 2 filters the Main channels on the left . . .

from the GUARD channels on the right.



Toggle between RT1 Main & GUARD with the soft-key.

A dual radio system with **Mode 2** display will look similar to this . . .



Advanced Mode Operations



Phone Patch Mode



Relay Mode

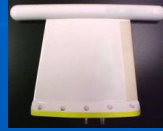


Simulcast Mode

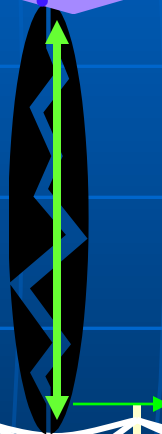


Repeater Mode

Phone Patch Mode



— Required Equipment —



Phone Patch
Ground Equipment

Hospital
(for example)

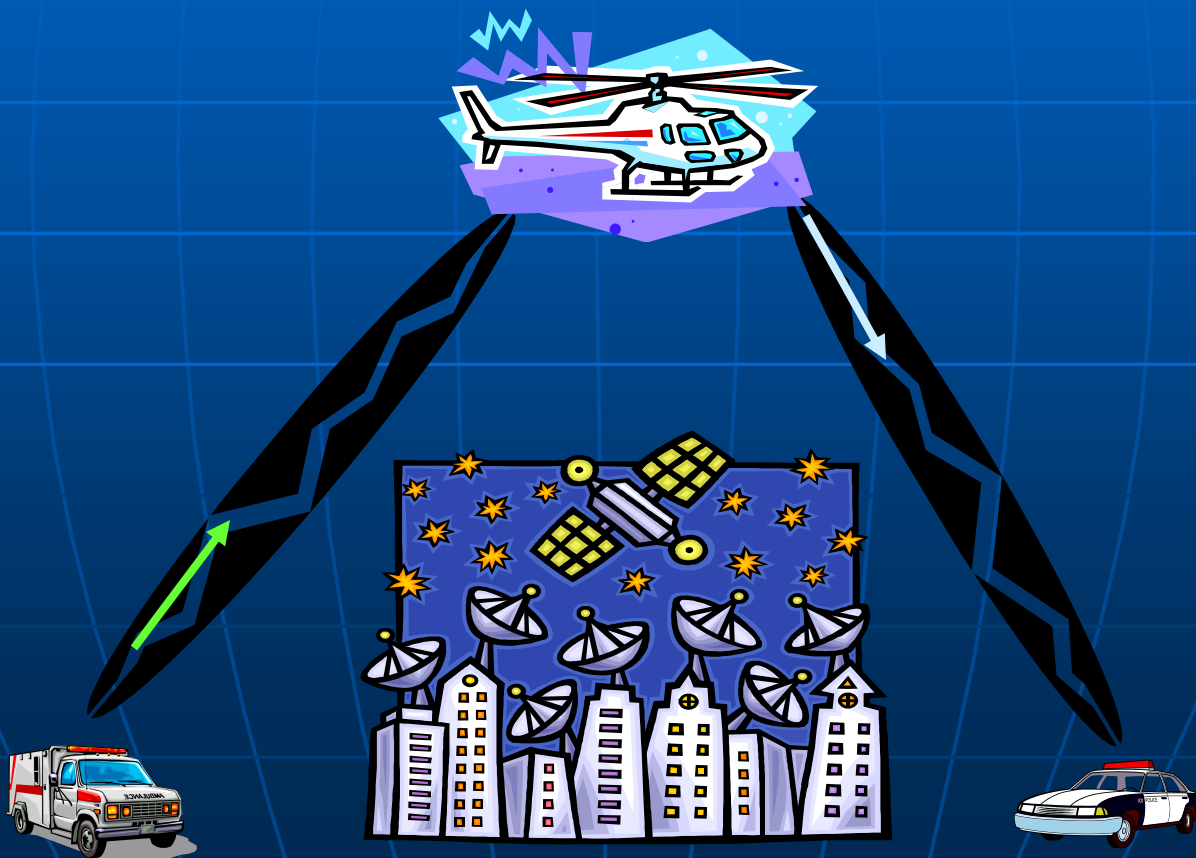


Relay Mode

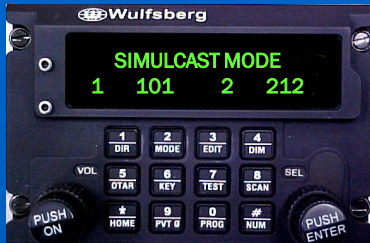


Note: This function requires
TWO RT-5000's

Required Equipment



Simulcast Mode



Note: This function requires
TWO RT-5000's

Required Equipment



Relay-Simulcast Mode



Note: This function requires
TWO RT-5000's

Required Equipment



Airborne Repeater Mode



Note: This function requires
TWO RT-5000's

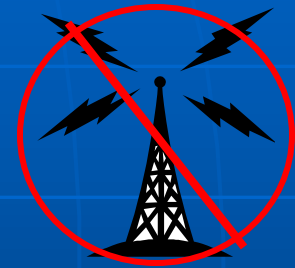
Required Equipment



HQ



Group A



Example:
Repeater Tower
Not Functional

Group B



Section IV

C-5000

Programming

Wulfsberg RpWin (Remote Programming Software) for Windows™

RpWin

Loading the Software

RpWin Remote Programmer Software (Windows compatible version)

Purpose

RpWin provides an efficient method of configuring hardware and loading frequency plans into the C-5000 Control Management Unit for single or multiple radios.

System Requirements

- Memory: 32 MB RAM minimum
- Operating System: Windows 95/98/ME/NT/2000/XP
- Peripherals: Microsoft Windows supported Serial Port

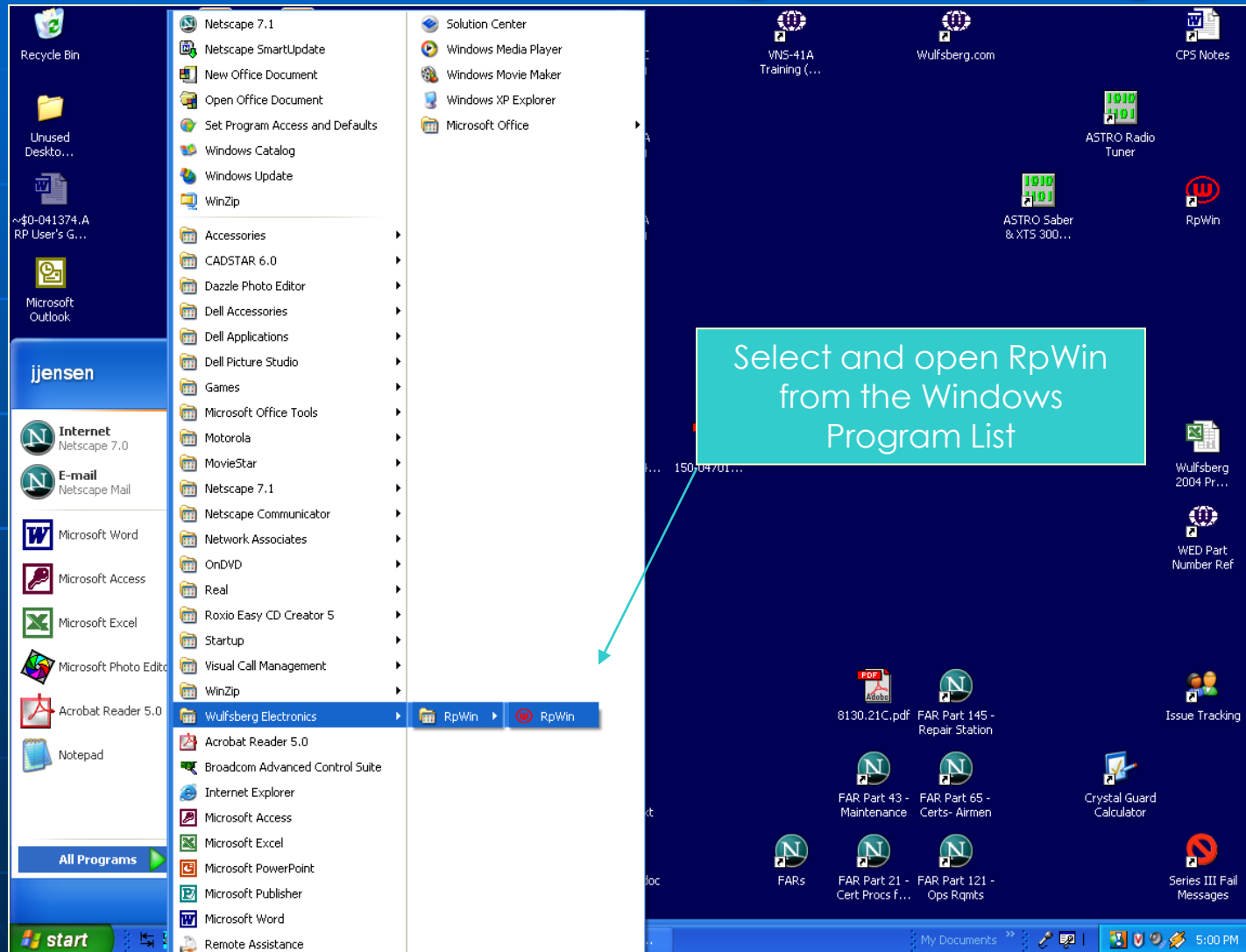
NOTE: Windows VISTA
currently not supported

Software Installation

1. Insert the Remote Programmer CD into the compact disc drive on your computer.
2. Access the CD Drive from Windows Explorer.
3. Run the installation program, SETUP.EXE.
4. Follow the instructions on the screen. (You may be prompted to re-boot your computer).

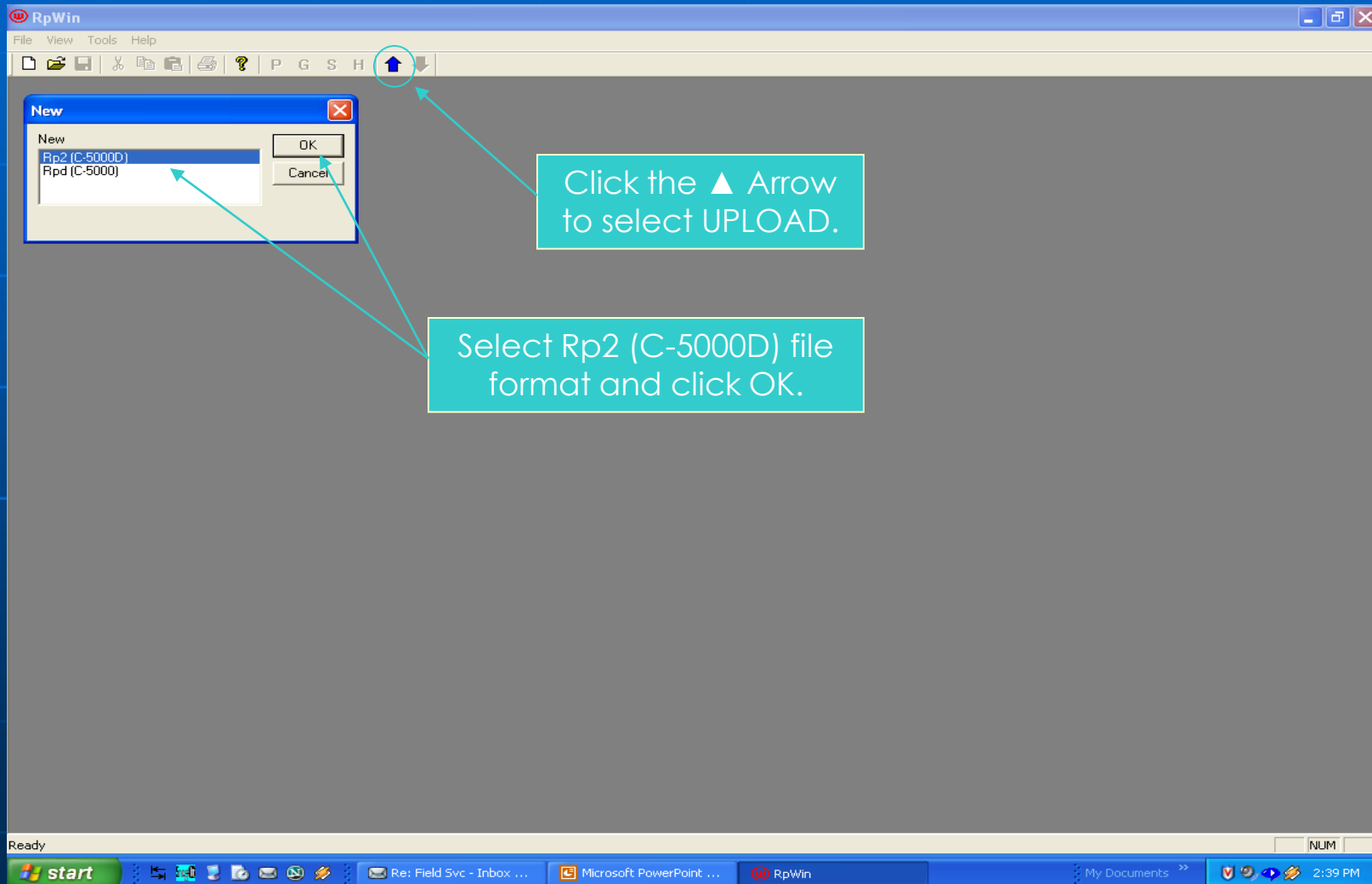
RpWin

Getting Starting



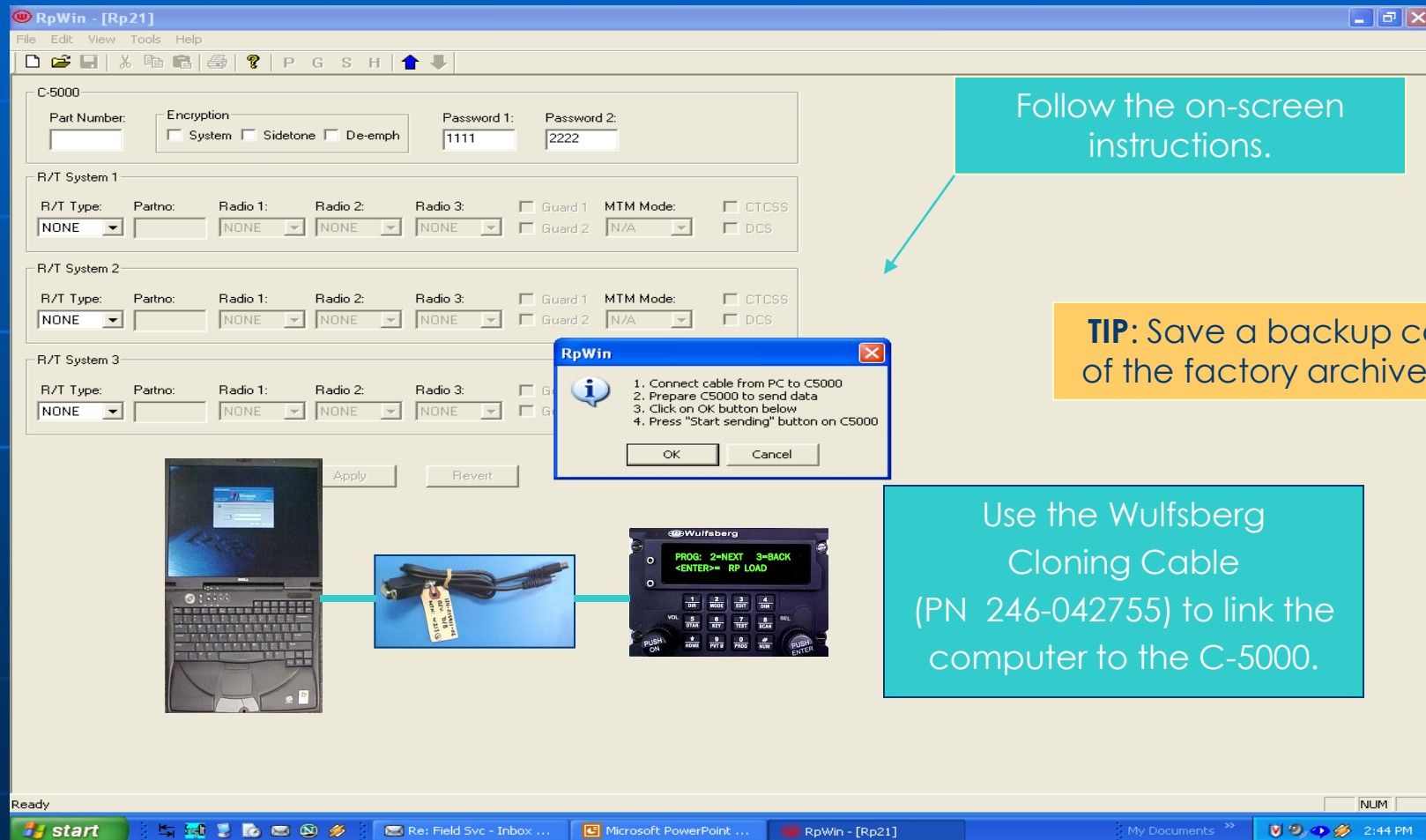
RpWin

Reading the C-5000 archive



RpWin

Reading the C-5000 Archive Cont'd



Follow the on-screen instructions.

TIP: Save a backup copy of the factory archive file.

Use the Wulfsberg Cloning Cable (PN 246-042755) to link the computer to the C-5000.

RpWin

1. Connect cable from PC to C5000
2. Prepare C5000 to send data
3. Click on OK button below
4. Press "Start sending" button on C5000

OK Cancel

Wulfsberg

PROG: 2-NEXT 3-BACK
<ENTER>= RP LOAD

start

Re: Field Svc - Inbox ... Microsoft PowerPoint ... RpWin - [Rp21] My Documents >> 2:44 PM

RpWin

Reading the C-5000 Archive

Cont'd



Enter the Level 2 Password
(Factory default = <2222>)

PROG: 2=NEXT 3=BACK
<ENTER>= RP LOAD

Select RP Load mode.

MEMORY TRANSFER
START SENDING

Press START to activate
the upload function.

MEMORY TRANSFER
SENDING BLOCK=000

When complete, press
HOME twice to return to
the main screen.

RpWin

Hardware Configuration

RpWin - [Ops Training.Main FM.RP2]

File Edit View Tools Help

Part Number: 1200 Encryption: ☐ System ☐ Sidetone ☐ De-emph Password 1: 1111 Password 2: 2222

R/T System 1

R/T Type: RT-5000 Partno: 0611 Radio 1: NONE Radio 2: NONE Radio 3: NONE Guard 1: ☐ MTM Mode: ☐ CTCSS ☐ DCS

R/T System 2

R/T Type: NONE Partno: NONE Radio 1: NONE Radio 2: NONE Radio 3: NONE Guard 1: ☐ MTM Mode: ☐ CTCSS ☐ DCS

Apply Revert

NUM

Ready

start Re: Jet Avionics Test ... Microsoft PowerPoint ... RpWin - [Ops Trainin... My Documents 12:42 PM

You may edit the passwords with any 4-digit number or enter <0000> to bypass Password 2. Password 1 may not be bypassed.

Enter the C-5000 Part #

Enter the R/T Type and Part #

RpWin Preset Channel Setup

RpWin

Preset Channel Setup

RpWin - [Rp21]

File Edit View Tools Help

P G S H ↑ ↓

No.	RT	Mod.	Alpha ID	Zone	Chan	RX Freq	RX Tone	TX Freq	TX Tone	TX Key	TX Pwr	RX Phase	TX Phase	Dev.	B.W.	Inj2	Inj3
1																	
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	
11																	
12																	
13																	
14																	
15																	
16																	
17																	
18																	
19																	
20																	
21																	
22																	
23																	
24																	
25																	
26																	
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28																	
29																	
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31																	
32																	
33																	
34																	
35																	
36																	
37																	
38																	
39																	
40																	
41																	
42																	

Select the Presets page to define your preset channels.

We are about to create a new Preset channel for the Main transceiver portion of the RT-5000.

A typical frequency plan will have the following criteria:

Preset Channel #:	1
Channel Name:	MAIN ANLG FM
Modulation:	FM or AM
Rx Frequency:	150.000 MHz
Tx Frequency:	150.000 MHz
Rx Sub-audible Tone:	None
Tx Sub-audible Tone:	None
Tx Power Output:	High
Bandwidth:	Standard

Ready

start

NUM

9:35 AM

RpWin

Preset Channel Setup Cont'd

You may define up to 350 user-defined channels.

Double-click on Ch1 1 to open the Preset Channel Properties Box.

Preset Channel Properties

Channel: 1, R/T #: [dropdown], Alphanumeric ID: [text], Modulation: FM, Zone/Channel: 0 0

Receive Properties

Frequency: 0.000, Tone Type / Number: NONE, Bandwidth: Standard

Transmit Properties

Frequency: 0.000, Tone Type / Number: NONE, Power: High

Encryption

Type: Internal, Key: 0

Advanced

2nd IF Inj: High, 3rd IF Inj: Low, Deviation: Standard, TX Phase: 0, RX Phase: 0

RpWin

Preset Channel Setup Cont'd

By default, assign all channels to radio system #1 for single RT-5000 installations.

The Alpha ID name you enter for each channel will appear on the C-5000 display.

NOTE: P-25 and TRK modulation does not apply to analog RT-5000's

Channels will be AM or FM only.

Enter the Receive frequencies, Transmit frequencies, etc.

The screenshot shows the RpWin - [OPSTRA-1.RP2] window with a menu bar (File, Edit, View, Tools, Help) and a toolbar. Below the toolbar is a grid with columns: No., RT, Mod., Alpha ID, Zone, Chan, RX Freq, RX Tone, TX Freq, TX Tone, TX Key, TX Pwr, RX Phase, TX Phase, Dev., B.W., Inj2, Inj3. The 'Preset Channel Properties' dialog box is open, showing fields for Channel (1), R/T # (1), Alphanumeric ID (MAIN ANLG FM), Modulation (FM), and Zone/Channel (0-8). It also has sections for Receive Properties (Frequency: 150.000, Tone Type / Number: NONE, Bandwidth: Standard) and Transmit Properties (Frequency: 150.000, Tone Type / Number: NONE, Power: High). Other fields include Encryption (Type: Internal, Key: 0) and Advanced settings (2nd IF Inj: High, 3rd IF Inj: Low, Deviation: Standard, TX Phase: 0, RX Phase: 0). The Windows taskbar at the bottom shows the Start button and several open applications: Mozilla Calendar, Inbox for jay.jensen..., Microsoft PowerPoint..., RpWin - [OPSTRA~1..., and My Documents. The system clock shows 3:24 PM.

RpWin

Preset Channel Setup Cont'd

Note: When finished, be sure to 'Apply' your data changes and save.

The Advanced box 'IF Inj.' and 'Phase' are normally unaltered from the default values.

Preset Channel Properties

Channel: 1 R/T #: 1 Alphanumeric ID: MAIN ANLG FM Modulation: FM Zone/Channel: 0 0

Receive Properties

Frequency: 150.000 Tone Type / Number: NONE Bandwidth: Standard

Transmit Properties

Frequency: 150.000 Tone Type / Number: NONE Power: High

Encryption

Type: Internal Key: 0

Advanced

2nd IF Inj.: High 3rd IF Inj.: Low Deviation: Standard TX Phase: 0 RX Phase: 0

RpWin Guard Receiver Programming

RpWin - [Rp21]

File Edit View Tools Help

P G S H

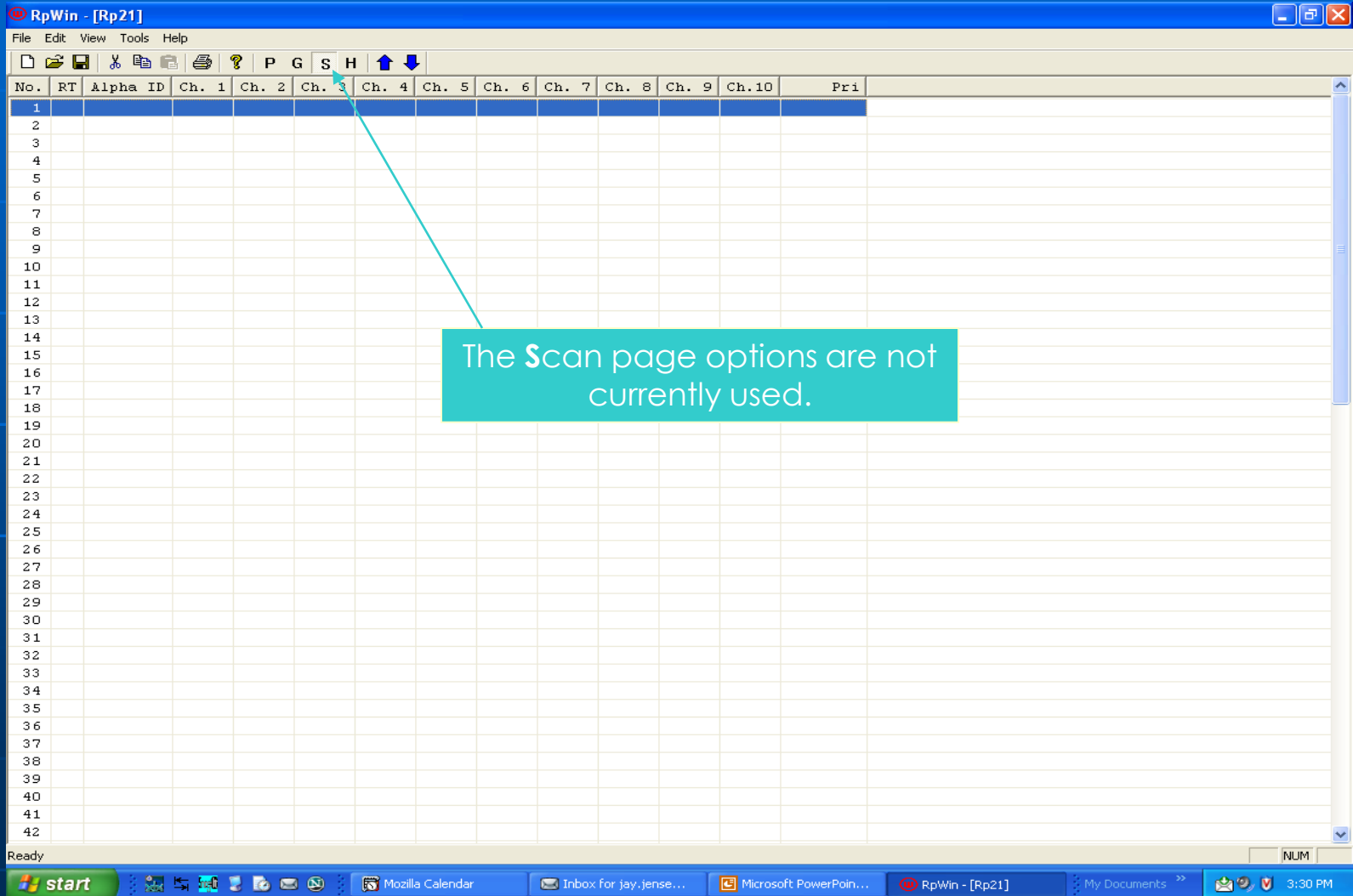
No.	RT	Mod.	Alpha ID	Zone	Chan	RX Freq	RX Tone	TX Freq	TX Tone	TX Key	TX Pwr	RX Phase	TX Phase	Dev.	B.W.	Inj2	Inj3
G1	1	FM	SYS1 GD1			0.000		0.000		HI		0	0	STD.	STD.	HI	LO
G1	2	FM	SYS2 GD1			0.000		0.000		HI		0	0	STD.	STD.	HI	LO
G1	3	FM	SYS3 GD1			0.000		0.000		HI		0	0	STD.	STD.	HI	LO
G2	1	FM	SYS1 GD2			0.000		0.000		HI		0	0	STD.	STD.	HI	LO
G2	2	FM	SYS2 GD2			0.000		0.000		HI		0	0	STD.	STD.	HI	LO
G2	3	FM	SYS3 GD2			0.000		0.000		HI		0	0	STD.	STD.	HI	LO

The **G**uard page is used to setup the Guard Receiver preset channels for **RT-5000 PN** flavors -0201 through -0501 only.

Ready NUM

start Mozilla Calendar Inbox for jay.jense... Microsoft PowerPoin... RpWin - [Rp21] My Documents 3:32 PM

RpWin Scan Programming



The screenshot displays the RpWin - [Rp21] application window. The interface includes a menu bar (File, Edit, View, Tools, Help) and a toolbar with icons for file operations and a 'P G S H' button set. Below the toolbar is a table with the following columns: No., RT, Alpha ID, Ch. 1, Ch. 2, Ch. 3, Ch. 4, Ch. 5, Ch. 6, Ch. 7, Ch. 8, Ch. 9, Ch. 10, and Pri. The table contains 42 rows, with the first row (No. 1) highlighted. A callout box with a blue background and white text points to the 'S' button in the toolbar, stating: "The Scan page options are not currently used."

No.	RT	Alpha ID	Ch. 1	Ch. 2	Ch. 3	Ch. 4	Ch. 5	Ch. 6	Ch. 7	Ch. 8	Ch. 9	Ch. 10	Pri
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
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40													
41													
42													

RpWin

Download the C-5000 RpWin File

RpWin - [Ops Training.TEST FILE.RP2]

File Edit View Tools Help

With your completed file open and ready to download ...

... Click the ▼ Arrow to select DOWNLOAD.

Follow the on-screen instructions.

The C-5000 will reinitialize when Download is complete.

1. Connect cable from PC to C5000
2. Click on OK button below

OK Cancel

Ready

start

Re: Field Svc - Inbox ... Microsoft PowerPoint ... RpWin - [Ops Trainin... My Documents >> 3:32 PM

No.	RT	Mod.	Alpha ID	Zone	Chan	RX Freq	RX Tone	TX Freq	TX Tone	TX Key	TX Pwr	RX Phase	TX Phase	Dev.	B.W.	Inj2	Inj3
1	1	FM	MAIN ANLG FM			150.000		150.000		HI		0	0	STD.	STD.	HI	LO
10	1					150.125										HI	LO
11	1					150.125			14							HI	LO
20	1	P25	ITM DGTL FM	2	2	150.125		150.125		HI		0	0	STD.	STD.	HI	LO
21	1	P25	ITM DGTL PVT	3	2	150.125		150.125		HI		0	0	STD.	STD.	HI	LO

Disclaimer

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